

File

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LOCKHEED AIRCRAFT CORPORATION		ENGINEERING STUDY <input type="checkbox"/>	CHANGE PROPOSAL <input checked="" type="checkbox"/>	LAC	156-2* 156-1					
DATE 29 JUNE 1963 30 JUNE 1963		AFFECTS: WSPO <input type="checkbox"/>	PROJECT <input checked="" type="checkbox"/>							
NAME OF MAJOR COMPONENT		PART OR LOWEST SUBASSEMBLY		PART NO. & MODEL OR TYPE						
TITLE OF PROPOSAL : REVISION - INVERTER SYSTEM										
NATURE OF PROPOSAL :										
SEE PAGE 2										
<p>*LAC-156-2 - To increase number of kits from 7 to 9 as a result of transfer of Articles #348 &amp; #362 from Fog to Project on 6-20-63. Increase est. price from [redacted] No additional funds required.</p>										
REASON FOR PROPOSAL :										
SEE PAGE 2										
ES	ESTIMATED COST AND TIME INVOLVED :					STAT				
	ADDITIONAL FUNDING REQUIRED :									
CP	ESTIMATED COST FOR KITS OR PARTS : SEE PAGE 5					STAT				
	ADDITIONAL FUNDING REQUIRED : SP-1922 - NONE IF LAC-153 IS CANCELLED (FY '63)									
ITEMS AFFECTED BY PROPOSAL :						REF. [redacted]	STAT			
SAFETY <input checked="" type="checkbox"/>	MISSION EFFECTIVENESS <input checked="" type="checkbox"/>	PERFORMANCE <input checked="" type="checkbox"/>	OPERATING PROCEDURE <input checked="" type="checkbox"/>	INTER-CHANGEABILITY <input checked="" type="checkbox"/>	WEIGHT OR WEIGHT & BALANCE <input checked="" type="checkbox"/>	TOOLS & SUPPORT EQUIPMENT <input type="checkbox"/>	MAINTENANCE PROCEDURE <input checked="" type="checkbox"/>	SERVICE LIFE <input checked="" type="checkbox"/>	FLIGHT MANUAL <input checked="" type="checkbox"/>	MAINTENANCE MANUAL <input checked="" type="checkbox"/>
EST. MAN/HRS. REQ'D. TO ACCOMPLISH CHANGE IN FIELD										
SOURCE OF PARTS FOR KIT						AVAILABILITY - WEEKS AFTER APPROVAL SEE PAGE 5				
DISPOSITION OF SPARES AFFECTED R1125 INVERTER NO LONGER USED R419-2 INVERTER - RETURN TO STOCK FOR USE BY FOG						STAT				
INITIATED BY : APPROVED : WSPO : APPROVED : WSPO : APPROVED : WSPO						PROJECT				
Customer Approved 2002/10/31 : CIA-RDP89B00980R000200180009-5										

REASON FOR PROPOSAL:

To provide more reliable, larger capacity inverter system with 100% back-up in the event of an inverter failure.

Loads on the 500 VA inverter are near maximum under certain flight configurations and future modifications requiring additional inverter power cannot be accomplished. This proposal allows for growth in addition to eliminating the carbon stack regulations which have been the source of most of the past inverter failures.

Revision to this ECP is being made to provide a back-up inverter capable of powering all known future loads including the improved Navigation/Autopilot system now being considered. This inverter system is simpler than that proposed in the original ECP in that it contains less switching and therefore will be more reliable. By installing the larger back-up system at this time, considerable time and effort will be saved when the improved Navigation/Autopilot system is installed.

NOTE: This quote based on the following requirements:

1. Continuous ignition load not to exceed 125 VA (maximum allowable after improved Navigation/Autopilot system is incorporated).
2. Continuous ignition and rendezvous beacon cannot be used simultaneously.

NATURE OF PROPOSAL:

Replace the existing 500 VA Main Inverter with a 750 VA unit, Leland P/N MGH182-100, per MS17406-1. In addition, install a Leland 750 VA unit as a Back-up Inverter to provide power in the event of failure of the Main Inverter. The Leland inverter provides static electronic circuits for voltage and frequency regulation. The continuous ignition inverter (250 VA) and control circuitry will be deleted and continuous ignition will be supplied by the AC generator with the inverter system as back-up. The AFTN-135 will be interlocked so that it cannot be energized whenever Continuous Ignition is turned on. This will be accomplished through the Aux Boost Pump switch. The 100 VA Emergency Inverter will be retained and will supply emergency power to the present compass system (includes ADF and VOR needles), Attitude Indicator, and EGT per the existing system. System XII will continue to be supplied from the AC generator with the inverter system as back-up.

## Nature Of Proposal (Cont'd.)

Revise the existing inverter circuits to accept the two 750 VA Inverters, one as a No. 1 (Main) Inverter and one as a No. 2 (Back-up) Inverter. All 400 cycle loads to be powered from the No. 1 Inverter or the No. 2 Inverter as selected by the pilot. The 100 VA Inverter will supply power to Emergency loads in the event of failure of the No. 1 and No. 2 Inverters or a failure of the DC generator. Replace the existing Inverter toggle switch in the cockpit with a rotary selector switch with 4 positions labeled as follows:

1. OFF - All inverters off. (NOTE: Continuous Ignition, if selected, will be supplied by the AC generator. Inverter back-up for Continuous Ignition is provided whenever the Inverter switch is in the No. 1 or No. 2 position.)
2. NO. 1 - The No. 1 Inverter is turned on and all loads, including the Inverter OUT Warning Light, are connected to its output. If the AC generator fails, Continuous Ignition and System XII are also transferred to its output.
3. NO. 2 - The No. 2 Inverter is turned on and all loads, including the Inverter OUT Warning Light, are connected to its output. If the AC generator fails, Continuous Ignition and System XIII are also transferred to its output.
4. EMERGENCY - To be selected in the event of a DC generator failure or a failure of both 750 VA Inverters. The Emergency Inverter is turned on and the Compass system (including ADF and VOR needles), attitude indicator, EGT, and Inverter Out Light are connected to its output.

Relays for accomplishing inverter switching and load transfer will be mounted in the Q-Bay. An isolation transformer will be added to the B phase to permit additional B phase loading and more evenly balance the loading of the three phases. In addition, equipment and installations will be accomplished as follows:

1. The two 750 VA Inverters will be mounted on the middle shelf of the Q-Bay equipment rack.
2. Two 200 Amp. Inverter Power Relays will be mounted on the FS 307 ring on the right side of the Q-Bay, or in the Q-Bay equipment rack.
3. The Q-Bay equipment rack will require beef up at the forward angle of the ARC-34 shelf and the rear channel of the middle shelf.

## Nature Of Proposal (Cont'd.)

4. The Destructor will be moved further to the center of the middle shelf and the Destructor Time Delay relay moves to the underside of the ARC-34 shelf.
5. The accelerometer will be relocated to the wheel well or some other location in the Q-Bay.
6. The Continuous Ignition Inverter and the control relays will be deleted. The ADF power supply will be moved from the Q-Bay equipment rack to the Continuous Ignition shelf. The Fuel Flow power supply will be retained within the Q-Bay equipment rack.
7. The Q-Bay hatch seal low pressure regulator and plumbing will be relocated within the equipment rack.
8. Two additional control circuit breakers will be installed in the cockpit.
9. The Inverter control switch will be revised from a 3 position toggle to a 4 position selector switch.
10. Two 70 A Inverter Power circuit breakers will be added to the DC Bus in the Q-Bay.
11. The Aux Boost Pump switch will be wired to prevent energizing the APN-135 whenever the switch is in the ON position.

Recent measurement of the Continuous Ignition load shows that it is much lower than the Vendor indicated. On the basis of a 125 VA Continuous Ignition load, the new 750 VA Inverter provides approximately 200 VA in excess of present loads. (Continuous Ignition and Rendezvous Beacon will not be operated simultaneously.) This will be available for future modifications and is adequate for powering the improved Navigation/Autopilot system now being studied. Even after these improvements are incorporated, additional loads can be added to the Inverter provided that load management is accomplished from the cockpit. (This is now accomplished by operating BEACON or HF, with the 500 VA Inverter.)

Deletion of the Continuous Ignition inverter is a weight saving and in effect lowers the DC load by approximately 10 amps. (No load current of Continuous Ignition Inverter.) The Continuous Ignition rack will be retained for the ADF power supply. This rack interferes with the A.O. panel, System VII, and the "A" camera configuration and eliminates their usage.

The first installation will be made at the factory on Article #352 and thoroughly checked out and flight tested prior to the issuance of kits. The 750 VA Inverter has been flight tested and proven during several months of operation on Article #352. Temperatures measured during this time were well below limits.

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Approved For Release 2002/10/31 : CIA-RDP89B00980R000200180009-5

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